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APPENDIX A:  
VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION

The paragraph on page 1, lines 14-17 has been amended as follows:

TBGA (Tape Ball Grid Array) is an improved type of BGA technology which is characterized by the use of a tape as the [based] base for the mounting of a semiconductor chip and the attachment of solder balls thereon. The TBGA technology allows the overall package body to be made more compact in size.

The paragraph on page 2, lines 20-25 has been amended as follows:

Referring to FIG. 2A and FIG. 2B, the TBGA package is constructed on a heat sink 10 and a tape 20 adhered to the heat sink 10 by means of an adhesive layer 21. Further, the tape 20 is formed with a via hole 22 to expose a selected part of the heat sink 10. To allow ground-ball attachment, a ring-shaped ground-ball 31 is formed over the tape 20 and around the via hole 22; and a solder mask 40 is formed over the tape 20 to mask all the areas on the tape 20 other than the inner part of the ground-ball pad [41] 31.

The paragraph on page 6, lines 12-17 has been amended as follows:

As shown in FIG. 3B, it is a characteristic feature of the invention that the ring-shaped ground-ball pad 131 is formed with a plurality of air vents 131a spaced substantially at equal radial intervals around the ground-ball pad 131, and the air vents 131a are cut all the way into the tape 120 until reaching the bottom surface of the heat sink 110. In this embodiment, the air vents 131a are rectangularly shaped in cross section and spaced at 180[ ]° radial intervals around the ring-shaped ground-ball pad 131.

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The last paragraph on page 6 has been amended as follows:

In the embodiment of FIG. 3B, the ground-ball pad 131 includes two air vents 131a which are each substantially rectangularly-shaped in cross section and are arranged at  $180[\square]^\circ$  intervals on the periphery of the ground-ball pad 131.

The first paragraph on page 7 has been amended as follows:

FIGs. 4A-4C are schematic diagrams showing various other embodiments of the ring-shaped ground-ball pad 131. In the embodiment of FIG. 4A, the ring-shaped ground-ball pad 131 is formed with two air vents 131b which are triangularly shaped in cross section and spaced at  $180[\square]^\circ$  radial intervals around the ring-shaped ground-ball pad 131. In the embodiment of FIG. 4B, the ring-shaped ground-ball pad 131 is formed with three air vents 131c which are rectangularly shaped in cross section and spaced at  $120[\square]^\circ$  radial intervals around the ring-shaped ground-ball pad 131. In the embodiment of FIG. 4C, the ring-shaped ground-ball pad 131 is formed with four air vents 131d which are rectangularly shaped in cross section and spaced at  $90[\square]^\circ$  radial intervals around the ring-shaped ground-ball pad 131. Beside these embodiments, various other shapes for the air vents are possible.

#### IN THE CLAIMS

Claims 1-8 have been amended as follows:

1. (Amended) A method for fabricating a ground-ball bonding structure on a TBGA package constructed on a heat sink and a tape[;], the method comprising the steps of:
  - (1) forming a via hole in the tape to expose a selected part of the heat sink;
  - (2) forming a ring-shaped ground-ball pad over the tape and around the via hole[;], the ring-shaped ground-ball pad being formed with a plurality of air vents spaced substantially at

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equal radial intervals around the via hole and cut all the way into the tape until reaching the heat sink;

(3) forming a solder mask over the tape while unmasking the ring-shaped ground-ball pad, wherein a distance between outermost edges of the air vents is at least equal to a diameter of the unmasked ring-shaped ground-ball pad, so as to form an interspaced ring of the ground-ball pad and allow each of the air vents to extend outwardly from the via hole to a position beneath the solder mask;

(4) performing a solder-pasting process to paste a solder material through the solder mask into the via hole[;], and during the solder-pasting process, air-filled voids are undesirably left in the via hole;

(5) performing a first solder-reflow process to reflow the pasted solder in the via hole[;], and during the first solder-reflow process, the air in the air-filled voids would substantially be drawn via the air vents to outside atmosphere, thereby allowing the pasted solder to substantially fill up the entire void space of the via hole;

(6) attaching a solder ball by means of a solder flux to the pasted solder in the via hole;  
and

(7) performing a second solder-reflow process so as to reflow the solder ball, the solder flux, and the solder paste into an integral body of solder wetted to the ring-shaped ground-ball pad to serve as a ground ball connected to the heat sink.

2. (Amended) The method of claim 1, wherein in said step (2), the ground-ball pad is formed with two air vents spaced substantially at  $180[\square]^{\circ}$  intervals around the via hole.

3. (Amended) The method of claim 1, wherein in said step (2), the ground-ball pad is formed with three air vents spaced substantially at  $120[\square]^{\circ}$  intervals around the via hole.

4. (Amended) The method of claim 1, wherein in said step (2), the ground-ball pad is formed with four air vents spaced substantially at  $180[\square]^{\circ}$  intervals around the via hole.

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5. (Amended) A TBGA package configuration, comprising:
- (a) a heat sink;
  - (b) a tape mounted over the heat sink and formed with a via hole to expose a selected part of the heat sink;

(c) a ring-shaped ground-ball pad formed over the tape and around the via hole[;], the ring-shaped ground-ball pad being formed with a plurality of air vents spaced substantially at equal radial intervals around the via hole and cut all the way into the tape until reaching the heat sink[;], the air vents being used to facilitate the drainage of trapped air in the via hole due to solder material being filled into the via hole to outside atmosphere during a solder-reflow process; and

(d) a solder mask formed over the tape while unmasking the ring-shaped ground-ball pad, wherein a distance between outermost edges of the air vents is at least equal to a diameter of the unmasked ring-shaped ground-ball pad, so as to form an interspaced ring of the ground-ball pad and allow each of the air vents to extend outwardly from the via hole to a position beneath the solder mask.

6. (Amended) The TBGA package configuration of claim 5, wherein the ring-shaped ground-ball pad is formed with two air vents spaced substantially at  $180[\square]^\circ$  intervals around the via hole.

7. (Amended) The TBGA package configuration of claim 5, wherein the ring-shaped ground-ball pad is formed with three air vents spaced substantially at  $120[\square]^\circ$  intervals around the via hole.

8. (Amended) The TBGA package configuration of claim 5, wherein the ring-shaped ground-ball pad is formed with four air vents spaced substantially at  $180[\square]^\circ$  intervals around the via hole.

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The following new claims have been added:

9. (New) The method of claim 1, wherein in said step (3), the distance between the outermost edges of the air vents is greater than the diameter of the unmasked ring-shaped ground-ball pad.
10. (New) The TBGA package configuration of claim 5, wherein the distance between the outermost edges of the air vents is greater than the diameter of the unmasked ring-shaped ground-ball pad.